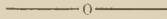


breast-bone is hardly visible, as its front part only is horny, having the appearance of a transverse, reddish-brown wavy line. The last abdominal segment has several minute, fleshy-pointed projections. The larva drops to the ground through the slit at a certain period of its development; hence, empty galls are often found.

Found in considerable numbers in the Central Park, N. Y., in May, 1869.



Contributions to the Natural History of the CYNIPIDÆ of the United States and their galls.—(Article 5th).

BY R. OSTEN SACKEN.

I.—New Observations on the Gall of CYNIPS QUERCUS PALUSTRIS, O. S.

Among the oak galls described in my previous articles, one of the most singular is the gall I named *Cynips quercus palustris*, from its frequent occurrence on *Q. palustris*, the pin-oak, although it is also occasionally found on other oaks of the red-oak group. This gall is especially remarkable on account of a small, cocoon-like body, containing the pupa, which rolls freely about in a comparatively large cavity, without being connected in any way with the walls of this cavity, or, in other words, with the substance of the plant upon which the gall is growing. An examination of the shell of this cocoon-like body (which, for brevity's sake, I will call *ovule*) proves that it does not consist of animal, but of vegetable matter, in other words, that the ovule is not a cocoon, although it contains the larva and afterwards the pupa. The growth of these galls is so sudden that, although I have seen thousands of them, I do not remember having seen one which was not full grown as far as the size is concerned. Once or twice only I discovered specimens arrested in their growth by some unknown agency and withered in that state; and in such specimens I observed the ovule still connected, by a short stem, with the leaf or branch upon which the gall was growing. It would seem, therefore, that the ovule is nothing but the usual kernel, existing in many other galls, but which here, during the growth of the gall, becomes disconnected from its shell.

During my rambles in the Central Park, in New York, in May, 1869, among numberless galls of this kind on the pin-oak, I observed a good many which were double, that is, consisted of two galls soldered together. Such galls instead of globular were oblong, sometimes slightly narrowed in the middle. Usually, there was no partition on

the inside between the two galls; in the cavity thus formed was the *likewise double* ovule. The coarctation in the middle of the ovule was generally much more marked, than that of the gall. The double ovule contained two well-formed pupæ without any partition between them, and hence almost in contact with each other.

Such double galls showed different degrees of coalescence, and the coalescence of their ovules was always in exact proportion to the coalescence of the outer shells of the galls. Sometimes the galls, although coalescent externally, were still separated by a partition internally; then each gall contained its own ovule. But whenever there was no inner wall between the galls, the ovules were also coalescent. In one case I observed the inner wall only partially removed, the cavities communicating by a rather small opening; the ovules were in this case coalescent by a small portion of their surface, otherwise retaining their rounded shape and thus almost representing the figure eight.

In one of the galls I observed a small green caterpillar with yellow stripes, which had taken its abode in it and eaten up a part of the ovule, and perhaps also sucked out the larva.

II.—*CYNIPS Q. NOTHA*, n. sp.

Still more remarkable, perhaps, than the preceding observation, is the discovery, among large numbers of the gall of *C. q. palustris*, of another gall, constructed on the same principle, that is, with a moveable ovule on the inside, but entirely different in the details of its organization.

This gall, growing on the same trees and in exactly the same situation with that of *C. q. palustris*, often alongside with it, is, however, much more rare. Its shell is not globular but oblong, much thinner and hence less succulent than that of *C. q. palustris*. Its green surface shows some longitudinal, semitransparent veins, of which there is no trace in the other gall. The ovule likewise is different; instead of round it is elongated, rounded at one end, pointed at the other, resembling a seed very much; its outer shell is much harder, smooth and shining. One of these galls had coalesced with a gall of *C. q. palustris*, just in the same manner as the above mentioned double galls of the latter kind. And, singular enough, the ovule of this double gall showed, by its unsymmetrical shape, that it was the compound of the ovules of the two different kinds. (I have preserved the specimen in my collection.)

I obtained several specimens, male and female, from these galls, which showed no perceptible difference from *C. q. palustris*. What

the different shape of the gall means, is a mystery to me. Until this is solved, I propose to call the gall *Quercus notha*, in order to distinguish it from the other. It may be that the flies themselves, upon closer examination, would show some specific differences. Both galls excluded their flies between the 20th and the 30th of May.

III.—*CYNIPS QUERCUS ECHINUS*, n. sp.—(From California).

Echinus-shaped, pinkish red gall of hardened gallic acid, on the leaves of *Quercus agrifolia*.

The gall, fastened to the underside of the leaf, consists of a globular body, covered with numerous pointed processes, which are not much shorter than the diameter of the body of the gall, the latter being from 0.2 to 0.3 of an inch. The inside of each gall contains a single insect in a small cavity. Mr. W. M. Gabb, to whom I am indebted for this gall, discovered it in Placer Co., California, in the low hills of the Sierra Nevada. According to his statement, the galls, when fresh, are of a bright scarlet, a little lighter at the tip of the processes. The substance of this gall is hard and brittle, consisting apparently of pure gallic acid. This gall belongs, therefore, to the same class with that of *Cynips quercus tubicola*, O. S. In both cases the leaves bearing the galls are not deformed at all, and the galls, when detached, leave hardly any trace behind them.

These galls reached me from California quite fresh, and in cutting some of them open I found the *Cynips* still alive. They seem to belong to the genus *Cynips* in Hartig's restricted sense.

Cynips quercus echinus, n. sp.—♀ 0.14 of an inch long. Brown, mixed with reddish-brown; head, thorax, antennæ and feet with a grayish pubescence. Head reddish brown more or less darker in the middle of the front and vertex; antennæ brown, somewhat stout; 14-jointed, the third joint long and slender, the following gradually decrease in length up to the 8th; the 6 last joints short, subequal. Thorax reddish brown, with a dark brown stripe in the middle, and two similar lateral stripes which are abbreviated in front; scutellum ellipsoidal, brownish. Abdomen brown, shining, hind margin paler; basal part of the second, largest, segment densely pubescent on the sides; this segment is subtriangular, the following ones project very little beyond it; ventral valve with a tuft of yellow hairs. Feet reddish brown, mixed with darker spots. Wings subhyaline; stout veins clouded with brown, especially the transverse vein above the areolet, which has a distinct brown cloud upon it; tip of the radial vein expanded into a brown dot; a brownish, elongated cloud in the anterior half of the cubital area; two or three small, indistinct streaks of the same color in the posterior half of the same area; another pale cloud in the next following area, below the areolet: and still another on the anal vein, close by its usual interruption.

IV.—On some species of *CALLIMOME*, parasitic on galls.

The numerous parasites infesting the galls of *Cynipidæ* and *Cecidomyiæ*, afford a most interesting and yet entirely unexplored field of research. Besides the inquiline *Cynipidæ*, like *Aulax*, *Ceroptres*, *Synergus*, a large number of other insects is obtained by those who collect galls for the purpose either of preserving them, or of rearing the gall-producing insect. Most of those belong to the family of *Chalcididæ*, and especially to the genera *Callimome*, *Ormyrus*, *Eurytoma* and *Decatomia*. Here and there species of *Pteromalas*, *Tetrastichus*, or a wingless *Eupelmus* are obtained. That the economy of galls is not confined to Hymenoptera alone, is proved by the fact that more than once I have obtained a Coleopteron, *Hydrocera verticalis*, from galls in my breeding-boxes. (compare *Proc. Ent. Soc. Phil.* 1861, pp. 68 and 71). The curculio *Otilocephalus americanus* also occasionally takes its abode in the corky substance of a gall, (compare l. c., p. 68).

Various are the relations in which all these species stand to the gall-producing insect, and it is in this direction that a great deal remains to be observed and studied. It seems that while the inquiline or parasitical *Cynipidæ* (*Aulax*, *Synergus*, etc.) live in the gall without attacking, although probably often injuring, the gall producing *Cynips*, the *Chalcididæ* are real parasites, the larvæ of which live at the expense of the larva of the gall-producer. But here, again, the questions how and when the eggs were deposited, what influence the parasites have on the growth of the gall, what difference exists between the mode of life of a *Callimome* and an *Ormyrus* or some other genus—all these questions remain unanswered.

My purpose in the present paper is merely to describe a few species of *Callimome*, obtained from galls by me or by others. I have confined myself to the most striking forms, omitting a good many species, which, from want of well defined plastic characters, I could not sufficiently characterize.

Species of *Callimome* are obtained from galls both of *Cynipidæ* and *Cecidomyiæ*, and hence, although the series of papers to which the present one belongs, treats of the natural history of the *Cynipidæ* only, I could not well omit the mention of those species of *Callimome* which infest the galls of *Cecidomyia*. In one case (*C. advena*), it seems pretty certain that the same species was bred from the galls of a *Cynips* and of a *Cecidomyia*.

If, on one side, the same species of *Callimome* infests galls of differ-

ent kinds, on the other, different species of *Callimome* are occasionally bred from galls of the same kind. Thus, both *C. brevicaula* and *C. advena* were obtained from the gall of *Diastrophus nebulosus*, O. S. *C. magnifica* and *C. flavicoxa* (perhaps also *C. solitaria*), were bred from the gall of *Rhodites radicum*.

Considerable materials for the present paper I owe to the communication of Mr. Norton, who had obtained a large number of *Callimome* from galls on the rose.

As, owing to the difficulty of this genus, doubts may arise concerning the identification of some of my species, I have deposited the types of my descriptions in the Museum of Comparative Zoology in Cambridge, Mass.

Analytical Table of the Species.

1. Pleuræ yellow, a single, shining green spot above the middle coxæ.....2.
Pleuræ metallic green or blue.....3.
2. Surroundings of the mouth yellow; prothorax yellow, slightly greenish above in the male.....1. *ebria*, n. sp.
Surroundings of the mouth green; prothorax green above in the male.....2. *dura*, n. sp.
3. All the femora dark green or blue.....4.
Femora yellow, except sometimes the hind ones.....5.
4. Thorax with large, deep, pitlike punctures, leaving only very small intervals.....3. *advena*, n. sp.
Thorax without such punctures, but with microscopical, transverse wrinkles which give it a sericeous appearance, and sparse, not deep, punctures.....4. *tubicola*, n. sp.
(and a group of allied forms).
5. Hind coxæ yellow, green or blue at the base only; base of the abdomen yellow.....5. *flavicoxa*, n. sp.
Hind coxæ green, yellow at the tip only.....6.
6. Prevailing color of the fore coxæ yellow, only with a small green spot near the base anteriorly; ovipositor remarkably short, not longer than the abdomen.....6. *brevicauda*, n. sp.
Prevailing color of the fore coxæ green.....7.
7. Collare with a purplish spot anteriorly, immediately before the insertion of the head, tip of the abdomen also more or less coppery; ovipositor, in normal specimens, considerably longer than the body.....7. *magnifica*, n. sp.
Collare altogether green, abdomen green or blue.....8.
8. Thorax bright green; ovipositor much shorter than the body.....8. *chrysochlora*, n. sp.
(and a group of allied forms).
Thorax pale green; ovipositor as long or a little longer than the body.....9. *solitaria*, n. sp.

Description of the Species.

1. *C. ebria*, n. sp.—Body yellowish, except the head, a part of the back, the scutellum, and a spot on the pleuræ, which are green; abdomen more or less tinged with brownish. Length ♂ 0.08—0.09; ♀ 0.11; ovipositor 0.08—0.09.

Head metallic green; mouth and its surroundings yellow, which color is more extended in the ♀ than in the ♂; scapus of the antennæ yellow, the rest black; front and vertex microscopically sculptured. Thorax yellow, except the scutellum, which is green, and a shining green spot on the pleuræ, above the middle coxæ; besides, in the ♂ the upper part of the mesothorax is green, which color also somewhat encroaches on the prothorax; in the ♀ this color of the back is less extended, more faint, and has a somewhat bluish tinge. Metathorax green in the ♂; yellow, with a bluish tinge, in the ♀. The scutellum is very minutely sculptured and has, also, some scattered and indistinct punctures which can only be perceived under a high magnifying power. Abdomen yellow, more or less tinged with brown on its upper side at the base, and on its latter half; the basal brown space has a metallic green reflection; the apical one is somewhat bronzed; both have more or less extent in different specimens, so that the yellow interval between them is more or less narrow; the underside, which is usually yellow, is also more or less encroached upon by the brown of the upper side: ovipositor brown, about equal in length to the body without the head; feet yellow, tarsi whitish; onychia brown; wings hyaline: costal vein slender.

One ♂ and two ♀ specimens, reared from the gall of *Lasioptera vitis*, O. S., on the wild grape, near Washington, D. C., (compare my paper on *Cecidomyia* in Loew's Monographs of N. Am. Diptera, p. 201.)

2. *C. dura*, n. sp.

From the gall of *Diplosis caryæ* (l. c. p. 191), I have reared a single male specimen, larger than the ♂ of the preceding species, as it measures 0.1—0.11, but resembling it in the distribution of the colors, except that the head is altogether green, there being no yellow round the mouth, and that the prothorax is green above, and yellow only below. The costal vein of the wings is much stouter.

3. *C. advena*, n. sp.—Greenish blue, head and thorax punctured, femora greenish or bluish; tibiæ of the ♀ yellow, the hind ones infuscated in the middle; tibiæ of the ♂ all infuscated; tarsi yellow, whitish at the base; brown at the tip. ♂ about 0.09; ♀ 0.12—0.13; ovipositor 0.11—0.12 of an inch long.

Head more greenish on the face, more bluish on the front, with rather deep, moderately dense punctures; scapus of the antennæ reddish yellow; first joint of the flagellum greenish, the others black; mouth brown; thorax greenish-blue or bluish-green, covered, rather densely, with deep, pit-like punctures, extending also over the scutellum. The posterior portion of the scutellum is separated by a fine, transverse, impressed line, is more greenish and more smooth than the remainder, being only covered with dense, short, microscopic striæ. Metathorax with a quadrangular, smooth space in the middle, divided in two by a longitudinal impressed line; its sides with irregular irregularities. Pleuræ greenish or bluish. Fore coxæ greenish, with very delicate, microscopic transverse striæ; middle and hind coxæ usually blue; the latter finely and densely punctured. Femora blue or green; the anterior ones more inclining towards the green, the posterior ones towards the blue; their inner side is always brown; their tip yellowish. Tibiæ of the ♂ brown in the middle, yellow at the extreme base and at the tip; the front ones with a greenish lustre; tibiæ

of the ♀ brownish-yellow, except the hind ones, which are infuscated, the base and the tip only remaining yellow. Fore tarsi pale yellow; onychia brown; middle and hind tarsi with the first and even the second joint whitish; the following joints yellow, the tip brown. Abdomen dark green, shining in the male; brilliant green, in some places bluish, in ♀; ovipositor as long as the body without the head, or a little shorter. Wings hyaline.

Reared from the large blackberry gall of *Diastrophus nebulosus*, O. S. Eleven ♀ and one ♂ specimens. Washington, D. C.

Five specimens (two ♂ and three ♀), apparently of this same species, were communicated to me by Mr. Jacob Stauffer, Lancaster, Pa. He bred them from the gall of *Asphondylia rudbeckiæ conspicua*, O. S. The tibiae of one of the males are a little paler; otherwise, I do not discover any differences.

1. *C. tubicola*, n. sp.—Green with bluish reflections; thorax sericeous with some very shallow, sparse, and indistinct impressions; feet black or greenish-black; tarsi whitish, tip black. ♂ about 0.07; ♀ 0.09; ovipositor about 0.1 of an inch long.

Head green, the sides of the face generally have a darker, bronze, coloring. The face is sparsely, but rather distinctly punctured and clothed with some scattered, short, whitish hairs; mouth yellowish-brown; vertex bluish-green, sericeous. Antennæ black, scapus of the ♀ yellowish. Thorax green, with a very slight tinge of bluish, rendered sericeous by dense, microscopic transverse striae; it is even except some indistinct, shallow, scattered impressions, visible only in a certain light; a very sparse, short pubescence is also apparent. Pleurae green, partly bright blue. Abdomen green, or bluish-green, bright, shining. Ovipositor of the ♀ about the length of the body. Hind coxæ with a distinct brownish, metallic tinge; their anterior part, however, generally green or blue. Femora metallic green, except the very tip, which is yellowish. Tibiæ: fore and middle ones brownish with a metallic reflection, except at both ends, which are yellow: this color is more extended on the fore tibiae, especially in the ♀. Hind tibiae dark brown, somewhat lighter brown at the tip. Tarsi whitish, black at tip. Wings hyaline.

Reared from the galls of *Cynips quercus tubicola*, three ♂ and a single ♀ specimen. Washington, D. C.

A good many species will be found closely allied to this, and, therefore, difficult to distinguish from it. I possess one male and two female specimens, apparently of the same species, perhaps a trifle larger: which have been obtained from galls of *Cynips quercus lanæ*.

A single specimen, obtained from *Cynips q. singularis*, Bassett, belongs, evidently, to a different species. It is larger, green, with very little bluish reflections, ovipositor considerably longer than the body, anterior tibiae paler, etc. Another still larger specimen (source unknown), is of a more brilliant green; all the tibiae are yellow; the ovipositor likewise very long.

5. *C. flavicoxa*, n. sp.—Coppery green, feet yellow. hind coxæ yellow. bright green at the basis; anterior half of the abdomen yellow; posterior purplish coppery; a slight shade of yellow in the middle of the forewings. ♀ about 0.13, ovipositor 0.10 of an inch long.

Face shining green with a golden reflection, very finely (almost microscopically), and sparsely punctured and pubescent; front more coppery and rather opaque. Antennæ black; scapus, except its tip, yellow; mouth yellow on the underside, mandibles somewhat brownish. Ground color of the thorax a rather dull metallic green, more or less tinged with coppery; this coppery tinge sometimes appears principally on the prothorax, sometimes it extends, also, over the whole mesothorax; there is, usually, (although not always) a darker spot on the anterior part of the prothorax, near the junction with the head, which spot, in some specimens, has a beautiful purple color. The narrow hind edge of the scutellum, separated by a furrow, and the metathorax are sometimes of a more intense green color. Pleuræ shining green. The surface of the thorax, including the scutellum, is finely, although not very densely, punctured. The metathorax is smooth, with the usual microscopic sculpture on its sides. Abdomen brownish-yellow; a metallic green spot near the extreme basis above; its posterior half coppery, with a purplish reflection. Feet, including coxæ, yellow; hind coxæ green at the basis, on the extent of which color they are finely and densely sculptured; basis of the tarsi whitish. Wings grayish hyaline; a pale yellow cloud or streak occupies the middle of the disc, hardly reaching beyond the stigmal branch.

Six female specimens, reared by Mr. Norton from the gall of *Rhodites radicans*, O. S. The *C. magnifica*, as stated above, was reared from the same gall, and it is singular that both species should have two rather unfrequent characters in common, the spot on the neck of the prothorax and the cloud on the disc of the wings.

I possess specimens of a *Callinome* very like the preceding species, but distinguished by some constant characters. I found three ♀ and five ♂ specimens of this kind in a box, containing the common black-berry gall; but I am not positive about their having escaped from this gall, as I had kept some rose galls in the same box before.

The female specimens differ from those of *C. flavicoxa* by a slightly larger size, a distinctly longer ovipositor, which is almost as long as the body without the head, the more handsome green color of the thorax, the bluish base of the yellow hind femora and the much less extended purplish-coppery color on the hind part of the abdomen, which, in some specimens, is brownish-yellow with a slight tinge of coppery or greenish near the tip. The male specimens resemble the females, only the abdomen is altogether of dark color, with a transverse, yellow band upon its anterior part, which separates the greenish basis from the coppery or purplish posterior part. The basis of the hind femora in some of the specimens is green, instead of blue. A yellowish cloud on the forewings is not perceptible.

6. *C. brevicauda*, n. sp.—Green or bluish-green, abdomen with a reddish or coppery reflection: fore coxæ yellow, with a green spot near the base, feet reddish yellow. Ovipositor of the ♀ not longer than the abdomen; metathorax deeply rugose. ♂ about 0.12–0.13; ♀ 0.14; ovipositor about 0.06 of an inch long.

Head green, with some golden or bluish reflections; mouth yellowish-brown; face finely punctured and sparsely pubescent; front sericeous in consequence of very dense microscopic striæ; antennæ black, scape yellow, first joint of the flagellum green. Thorax green or bluish, microscopically rugose and punctured with moderate density; hind border of the prothorax with a more golden reflection. Latter part of the scutellum separated by a transverse row of punctures, more green or golden-yellow than the remainder, microscopically rugose. Pleuræ more light green between the fore and middle coxæ; a brilliant, smooth, sometimes coppery spot above the middle coxæ. Metathorax deeply rugose, not shining. Fore coxæ yellow with a green spot near the basis, anteriorly. Middle coxæ green at the base, the remainder yellow. Hind coxæ green, densely punctured; their tip yellow. Feet yellow; tarsi slightly whitish at the base. Hind femora sometimes with a slight green reflection on the outside, which is often wanting. Seen from above, the metathorax and the inner side of the hind coxæ appear blue. Abdomen green at the base; the remainder more coppery. Ovipositor very short, not longer than the abdomen. Wings hyaline. The ♀ with a pale, yellowish tinge in the middle of the disc.

Numerous ♂ and ♀ specimens, reared from the common blackberry gall of *Diastrophus nebulosus*, O. S.

7. *C. magnifica*, n. sp.—Thorax green, or bluish-green; collare with a purplish red spot near the junction with the head; abdomen blue or greenish at the base, purplish and coppery towards the tip; ovipositor longer than the body.—♂ about 0.14; ♀—0.16–0.17; ovipositor 0.21–0.23 of an inch long.

Face with a golden reflection, rather smooth and shining and only with indistinct and scattered punctures; a distinct, longitudinal earina in the middle; pubescence whitish, short and very scarce. Mouth yellowish-brown. Front generally purplish-red in the middle. Antennæ black, scape yellow, infuscated, and with a greenish reflection on the upper side, especially towards the tip. Thorax green, or bluish-green, with moderately dense, equally distributed punctures, visible under a moderate magnifying power; pubescence very delicate; on the prothorax, above, near the head, there is a purple spot, of variable size, but never reaching the hind margin of the prothorax; metathorax smooth, shining; pleuræ usually with a coppery spot on the prothorax, a golden-green, sometimes slightly coppery, finely striated space behind it, between the fore and the middle coxæ, and a perfectly smooth, shining space above the middle coxæ. Fore coxæ green at the base, yellow on their latter half, which color extends on their inside much further towards the base than on the outside. Middle coxæ green, their latter half yellow. Hind coxæ green; their tip yellow. They are, as usual, finely sculptured, but their sculpture is less deep and dense than in *C. brevis*, *tubicola*, *advena*, etc.; the coxæ, therefore, are not opaque, as in those species, but preserve their lustre. Feet yellow; tarsi whitish at the base; this color is most extended on the middle and hind tarsi; tip of all the tarsi brown. Knees also somewhat whitish.

Abdomen usually shining, blue at the base above; purplish towards the tip above; below more coppery red. Pubescence scattered; very distinct in the ♂. Ovipositor very long; wings with a very pale brownish yellow cloud, beginning a little beyond the base and extending a little beyond the stigmatal branch. It does not touch the anterior nor the posterior margin of the wing and is more distant from the latter than from the former.

Numerous specimens reared by Mr. Norton from the root-gall of the rose produced by *Rhodites radicum*, O. S.

A series of specimens was also communicated to me by Mr. Norton, distinguished from the former by the following characters:—

1. Front green, usually with a golden yellowish spot above the antennæ (but not purplish on the ocellar triangle). 2. Purplish spot on the prothorax small, often almost indistinct. 3. Abdomen greenish at the base (with hardly any trace of blue); more coppery than purplish towards the tip. 4. Hind coxæ reddish coppery, especially their hind part.

Mr. Norton's collection contained a considerable number (more than 50) specimens of *C. magnifica*, all labelled as having been reared from the gall of *Rhodites radicum*. There was, besides, about an equal number of specimens not labelled and therefore of unknown origin. All the latter specimens differed from the former in the above mentioned characters. If it was not for this perfect agreement of so many specimens obtained, apparently, from the same source, I would not hesitate to consider them as a mere variety of *C. magnifica*. Even now I am doubtful about their specific distinctness. Among Mr. Norton's specimens a single one, agreeing with the described variety, except that the basis of the abdomen is blue, was marked as having been reared from the gall of *Rhodites bicolor*.

If *C. magnifica* infests rose galls of different kinds, phytophagic varieties may occur.

8. *C. chrysochlora*, n. sp.—Bright green, abdomen near the base somewhat bluish, feet yellow; ovipositor longer than the abdomen but shorter than the body.—♂ about 0.10, ♀ 0.14—0.15; ovipositor about 0.12 of an inch long. Some females are much smaller and have the ovipositor proportionally shorter.

♀. Head of a lighter green than the thorax or slightly golden green, always more golden yellow or even reddish in the middle of the face. Mouth yellowish brown. Antennæ black, scapus yellow. Thorax green, often bluish, finely pubescent, microscopically rugose and punctured with moderate density. Mesothorax smooth, shining, with an almost imperceptible rugosity on the sides. Abdomen green, bluish at the base, golden yellowish or somewhat coppery on the underside towards the tip. The coxæ green, yellow at the basis and, in some specimens, on the inside; hind coxæ green, moderately sculptured (not more so than in *C. magnifica*), and, therefore, not opaque. Feet yellow, knees, tips of the tibiæ and tarsi paler; tip of the latter brown. Ovipositor longer

than the abdomen; but sometimes shorter than the distance between the tip of the latter and the basis of the wings. Wings hyaline.

♂. Like the ♀, but less yellow at the tip of the fore coxæ; face more green than yellowish-green; hind femora with a metallic green reflection and a green stripe on the underside; the basis of the abdomen blue, its latter half coppery or purplish.

Several ♂ and ♀ specimens reared from the gall of *Rhodites dichloceros*, Harris.

Mr. Norton's collection contained several males distinguished from the preceding by the hind femora being green in the middle. They may belong to the same species, as I do not perceive any other difference.

9. *C. solitaria*, n. sp.—Pale green, abdomen with a brassy tinge, hind borders of the segments somewhat bluish-green; feet yellow; ovipositor as long or longer than the body.—♀ about 0.12; ovipositor about 0.13 of an inch long.

♀. Head with golden reflections; thorax pale green. (If the green color of *C. chrysochlora* may be compared to that of *Cicindela biguttata*, Fab., the shade of green of the present species is more like that of *Chlanis solitarius*, Say). Abdomen green, with a yellowish, brassy, or somewhat coppery reflection, the hind margins of the segments being bluish green. The description of the sculpture of the preceding species can be applied to this. The scutellum is more flattened, less convex than *C. chrysochlora*. Fore femora green, yellow at the tip; hind femora green in the middle with a yellowish-brassy tinge, green along the borders. Feet yellow, knees and tarsi pale. Wings hyaline.

Three ♀ specimens reared from a rose gall (either *Rhodites radicum* or the rose gall described as No. 5, in the *Proc. Entom. Soc. Phil.* 1853, p. 42, as both galls were mixed in the same box).